

REMARKS

Reconsideration and the timely allowance of the pending claims, in view of the foregoing amendments and following remarks, are respectfully requested. Since this Amendment is being presented together with a Request for Continued Examination, entry of this Amendment is respectfully requested.

By this Amendment, claims 1 and 19 are amended. Support for the amendment to claims 1 and 19 may be found in the embodiment shown, for example, in FIG. 8 of the present patent application and its corresponding description. No new matter has been added. Accordingly, after entry of this Amendment, claims 1-27 will remain pending in the patent application.

Claims 1-5, 8 and 10-26 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Houston '173 (U.S. Patent No. 5,436,173). The rejection is respectfully traversed.

Claim 1 is patentable over Houston '173 at least because this claim recites a device manufacturing method comprising, *inter alia*, “patterning said first surface of said first substrate with ***normal alignment markers and at least one reversed alignment marker that is a mirror image of the normal alignment markers***,... locally etching said first substrate as far as said protective layer to ***form a trench substantially devoided of material around said at least one reversed alignment marker***, ... forming at least one patterned layer on said second surface of said first substrate using a lithographic projection apparatus having an alignment system configured to ***align said second surface using the at least one reversed alignment marker(s) revealed by each of trench***.”

Despite the Examiner's assertions, there is absolutely nothing in Houston '173 that remotely discloses, teaches or suggests ***each and every limitation*** of claim 1, including the features identified above.

By way of review, Houston '173 discloses a method for forming a semiconductor on an insulator device that provides accurately-controlled thickness of the outer semiconductor layer, allow processing of the outer semiconductor layer prior to bonding, and provide implementation of buried interconnects. (See, e.g., col. 2, lines 3-9 of Houston '173). Houston '173 discloses etching trenches 12 in a surface 14 of an outer semiconductor layer 16 using conventional photolithographic and etching techniques. (See, e.g., col. 3, lines 45-47 of Houston '173). The trenches 12 are then filled with insulation material 20 to form

isolation bodies 21a-b. (See, e.g., col. 3, lines 45-47 of Houston '173). Subsequently, the outer semiconductor layer 16 is inverted such that insulator layer 20 is disposed inwardly from outer semiconductor layer 16. Then, planarized surface 22 is brought in contact with planarized surface 30 under appropriate temperature and pressure to bond insulator layers 20 and 24 together. (See, e.g., col. 4, lines 3-8 of Houston '173).

The Office Action asserts that FIGS. 1a-e of Houston '173 disclose “etching the insulating layer till the protective layer is exposed and forming trenches (references 18a, 18b, 18c) around the alignment markers.” Specifically, the Office Action refers to trenches 12 and mesas 18a-c as allegedly teaching, disclosing or suggesting, respectively, the reversed alignment markers and the trenches formed around the reversed alignment markers of claim 1. (See, page 2 of the Office Action). Applicants strenuously disagree.

Unlike claim 1, mesas 18a-c of Houston '173 are *not* trenches that are ***substantially devoided of material***. On the contrary, mesas 18a-c are filled with the semiconductor layer material 16. (See, e.g., FIGS. 1a-e of Houston '173). Specifically, mesas 18a-c are formed when the semiconductor layer 16 is etched back until reaching isolation bodies 21a-b. (See, e.g., col. 4, lines 12-17 and FIGS. 1a-e of Houston '173). Thus, even assuming the etching process of Houston '173 forms somehow a trench (e.g. ,mesa 18a, b or c) around the repetitive structures 12, such trench is not devoided of material, as required in claim 1. In so doing, Houston '173 does not disclose, teach or suggest locally etching said first substrate as far as said protective layer to ***form a trench substantially devoided of material around said at least one reversed alignment marker***. Thus, for at least this reason, claim 1 is patentable over Houston '173.

The Office Action continues to insist that Houston '173 discloses the features of (1) patterning said first surface of said first substrate with ***normal alignment markers and at least one reversed alignment marker that is a mirror image of the normal alignment markers***, and (2) forming at least one patterned layer on said second surface of said first substrate using a lithographic projection apparatus having an alignment system configured to ***align said second surface using the at least one reversed alignment marker(s) revealed by each of trench***. Applicants respectfully submit that the Examiner’s bases for these assertions are woefully inadequate as they appear to ignore the claim language on its face.

Houston '173 merely teaches that trenches 12 define mesas 18a, 18b, and 18c in surface 14 and may also define ***alignment marks*** in outer semiconductor layer 16 for use in later processing steps. (See, e.g., col. 3, lines 50-53 of Houston '173). Houston '173 further

provides that individual components 34 may be formed on mesas 18a, 18b, and 18c by using the *same alignment marks* in layer 16 prior to the bonding step. (See, e.g., col. 4, lines 48-51; FIG. 1e of Houston '173).

With this said, Applicants remain at a loss as to the Examiner's insistence that Houston '173 teaches the use of normal alignment markers *and at least one reversed alignment marker that is a mirror image of the normal alignment markers*, as required by claim 1. As discussed above, Houston '173 only teaches the use of the *same* normal alignment markers in the later processing steps that form individual components 34. And, despite the passage citations provided by the Examiner, there is not a single reference in Houston '173 that teaches or even suggests the use of reverse alignment markers or, for that matter, an alignment marker that is a mirror image of another alignment marker. In fact, the terms "reverse," "mirror image," or any language evidencing such features is not used anywhere in Houston '173.

Claims 2-5, 8, 10-18, 24 and 27 are patentable over Houston '173 at least by virtue of their dependency from claim 1 and for the additional features recited therein.

Claim 19 is patentable over Houston '173 for at least the same reasons as provided above for claim 1 and for the features recited therein. For example, claim 19 is patentable over Houston '173 at least because this claim recites a device manufacturing method comprising, *inter alia*, "patterning said first surface of said first substrate with at least one first marker and at least one second marker, said second marker having reverse attributes of said first marker; ...locally etching said first substrate as far as said protective layer to reveal said at least one second marker by forming a trench substantially devoided of material around said at least one second marker; and forming at least one patterned layer on said second surface of said first substrate by aligning said first substrate to said at least at least one second marker revealed by each of said trench." As mentioned previously, these features are not disclosed or suggested in Houston '173. Accordingly, Houston '173 cannot anticipate claim 19.

Claims 20-23 and 25-26 are patentable over Houston '173 at least by virtue of their dependency from claim 19 and for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-5, 8, and 10-26 under 35 U.S.C. §102(b) as allegedly being anticipated by Houston '173 are respectfully requested.

Claims 6-7 and 9 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Houston '173 in view of Geffken '498 (U.S. Patent No. 6,180,498). The rejection is respectfully traversed.

Claims 6-7 and 9 are patentable over Houston '173 at least by virtue of their dependency from claim 19 and for the additional features recited therein. For example, Claims 6-7 and 9 are patentable over Houston '173 at least because these claims recite a device manufacturing method comprising, *inter alia*, “patterning said first surface of said first substrate with ***normal alignment markers and at least one reversed alignment marker that is a mirror image of the normal alignment markers***,... locally etching said first substrate as far as said protective layer to ***form a trench substantially devoided of material around said at least one reversed alignment marker***, ... forming at least one patterned layer on said second surface of said first substrate using a lithographic projection apparatus having an alignment system configured to ***align said second surface using the at least one reversed alignment marker(s) revealed by each of trench***.”

Geffken '498 fails to remedy the deficiencies of Houston '173. Applicants submit that this reference does nothing to cure the deficiencies identified above relative to claim 1. Thus, any proper combination of Geffken '498 and Houston '173 cannot result, in any way, in the invention of claims 6-7 and 9.

Accordingly, reconsideration and withdrawal of rejection of claims 6-7 and 9 under 35 U.S.C. §102(b) as allegedly being anticipated by Houston '173 in view of Geffken '498 are respectfully requested.

All matters having been addressed and in view of the foregoing, Applicants respectfully request the Examiner's reconsideration of this application, and the immediate allowance of all pending claims.

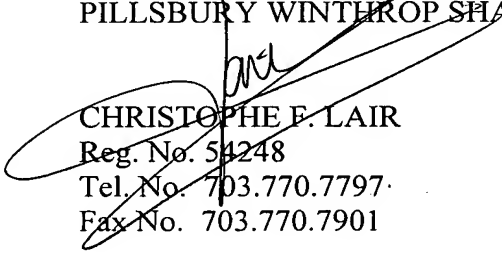
Applicants' Counsel remains ready to assist the Examiner in any way to facilitate and expedite the prosecution of this matter. If any point remains in issue in which the Examiner feels may be best resolved through a personal or telephone interview, please contact the Undersigned at the telephone number listed below.

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Please charge any fees associated with the submission of this paper to Deposit Account Number 033975, under Order No. 081468-0306625. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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